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SUPPLEMENTARY MATERIAL TO

LabVIEW virtual instrument for zone penetration studies in flow-based analytical systems

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EVALUATION OF THE RELIABILITY OF PREDICTED PEAK OVERLAPPING AREAS BY WEIGHING METHOD

We created an auxiliary LabVIEW VI (TwoPeaks simul XY Graph.VI) to generate artificial sets of data. A while loop comprises the Continuous PDF VIs that create the normal probability density functions (Owning Palette: Probability VIs). Noise is optionally added by employing the Random Number Functions (Owing Palette: Numeric Functions). To ensure independence, someone who prepared the testing set of data was a different person from the one who used them in the evaluation. Thirty-six text files each comprising two sets of artificial Gaussian peaks data points included all the different types of cases that can be foreseen. Graphs that represented chosen thirty-six cases were printed on paper in A3 format. All graphs were of the same size with equal scales. Printed graphs were left in the room at controlled temperature, where the weighing was later performed. After achieving stable paper mass, one peak which extended over the whole overlapping area was cut out and weighed. After that, the overlapping area was also cut out of it and weighed. Paper manipulation was done with the gloves. For the measurements, we were using XPR micro-balance with the readability of 0.5 μg (Mettler Toledo, Australia).

Graphical presentation of the predictions tested by weighing method on the artificial sets of Gaussian peaks is given in Fig. S-1. The calculated overlapping area was expressed relatively against the area of the first peak. The results obtained by weighing correlate with VI predictions at high level (R^2 = 0.9993).

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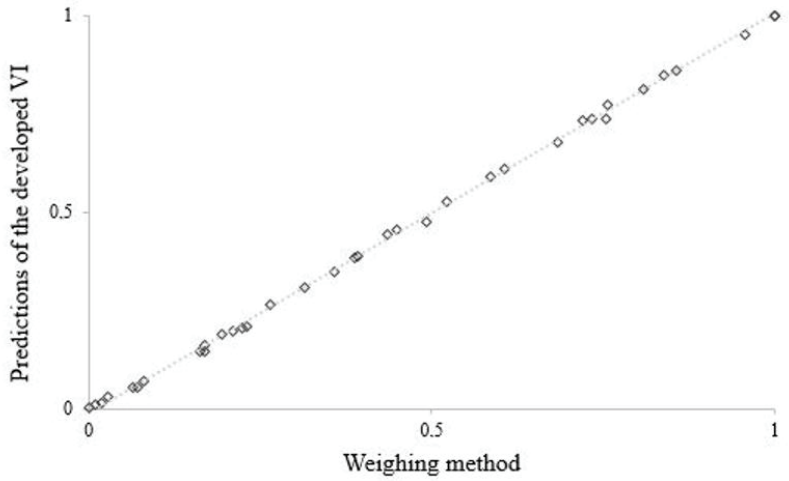

Fig. S-1. Correlation of the VI predictions of overlapping area with values obtained by weighing method, all expressed relatively as the fraction of overlapping areas against the area of the first peak.

HARDWARE CONTROL AND DATA ACQUISITION MODULES

Hardware control and data acquisition were done *via* LabVIEW 2015 software through NI cRIO 9066 controller integrating NI 9025 16-Bit Analog Input module, NI-USB-9472 Digital Output device, and NI-9870 4-Port, RS232 Serial Module. NI 9870 serial module was used for the control of the syringe pump, while data acquisition was done via NI 9025 AI module. The frequency of signal collection within the LabVIEW software was 8 signals per second.